In re Ashwath NAGARAJ., Application No. 10/813,210
Amendment A

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A method for protecting associative memory entries, the method comprising:

identifying a plurality of masks used for a plurality of associative memory entries; and

determining a protected entry for each entry in the plurality of associative memory entries, said each entry including an original data portion and an original mask portion, the protected entry including a protected data portion and a protected mask portion, the protected data portion including the original data portion and a protection bit located at a bit position corresponding to the original mask portion, and the protected mask portion including the original mask portion and a mask to enable the protection bit corresponding to the original mask portion and to mask protection bits corresponding to other masks of the plurality of masks;

wherein the protection bit is determined by a parity or other error protection calculation on a result of the original data portion masked with the original mask portion.

Claim 2 (original): The method of claim 1, comprising programming an associative memory with each of said protected entries.

Claim 3 (original): The method of claim 2, wherein said programming the associative memory with each of said protected entries includes programming each of said protective entries in two consecutive locations in the associative memory.

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Claim 4 (original): The method of claim 3, comprising performing a lookup operation in the associative memory based on a protected lookup word.

Claim 5 (original): The method of claim 4, wherein the protected lookup word includes a lookup word original data portion and a lookup word protected data portion, the lookup word protected data portion including a plurality of bits, each of the plurality of bits being determined by a parity or other error protection calculation on a result of the lookup word original data portion masked with a different one of the plurality of masks.

Claim 6 (original): The method of claim 5, wherein the plurality of masks consists of n masks and the lookup word protected data portion consists of n bits.

Claim 7 (original): The method of claim 2, comprising performing a lookup operation in the associative memory based on a protected lookup word.

Claim 8 (original): The method of claim 7, wherein the protected lookup word includes a lookup word original data portion and a lookup word protected data portion, the lookup word protected data portion including a plurality of bits, each of the plurality of bits being determined by a parity or other error protection calculation on a result of the lookup word original data portion masked with a different one of the plurality of masks.

Claim 9 (original): The method of claim 8, wherein the plurality of masks consists of n masks and the lookup word protected data portion consists of n bits.

Claim 10 (original): The method of claim 1, wherein the plurality of masks consists of n masks and the mask in the protected mask portion consists of n bits.

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Claim 11 (currently amended): A method for protecting associative memory entries, the method comprising:

determining a protected entry for each original entry of a plurality of original associative memory entries, the protected entry including the original entry and one or more protection bits, wherein said one or more protection bits are determined by a parity or other error protection calculation on the original entry; and

programming an associative memory with said each determined protected entry such that each particular entry of said determined protected entries is completely replicated in two or more consecutive entries in the associative memory.

Claim 12 (canceled)

Claim 13 (original): The method of claim 11, comprising:

determining a protected lookup value based on an original lookup value, the protected lookup value including the original lookup value and one or more protection bits determined by said parity or other error protection calculation on the original lookup value; and

performing a lookup operation in the associative memory based on the protected lookup value.

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Claim 14 (currently amended): An apparatus for protecting associative memory entries, the ~~method~~ <u>apparatus</u> comprising:

means for determining a protected entry for each original entry of a plurality of original associative memory entries, the protected entry including the original entry and one or more protection bits, wherein said one or more protection bits are determined by a parity or other error protection calculation on the original entry; and

means for programming an associative memory with said each determined protected entry <u>such that each particular entry of said determined protected entries is completely replicated in two or more consecutive entries in the associative memory.</u>

Claim 15 (canceled)

Claim 16 (original): The apparatus of claim 14, comprising:

means for determining a protected lookup value based on an original lookup value, the protected lookup value including the original lookup value and one or more protection bits determined by said parity or other error protection calculation on the original lookup value; and

means for performing a lookup operation in the associative memory based on the protected lookup value.

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Claim 17 (original): A method for performing lookup operations on an associative memory, the method comprising:

determining a protected lookup word based on a lookup word, the lookup word including a lookup word original data portion, the protected lookup word including the lookup word original data portion and a plurality of error protection bits, each of the plurality of protection bits corresponding to one of a plurality of masks and being determined by a parity or other error protection calculation on a result of the original data portion masked with a different one of the plurality of masks; and

performing a lookup operation in the associative memory based on the protected data word.

Claim 18 (original): An apparatus for performing lookup operations on an associative memory, the apparatus comprising:

means for determining a protected lookup word based on a lookup word, the lookup word including a lookup word original data portion, the protected lookup word including the lookup word original data portion and a plurality of error protection bits, each of the plurality of protection bits corresponding to one of a plurality of masks and being determined by a parity or other error protection calculation on a result of the original data portion masked with a different one of the plurality of masks; and

means for performing a lookup operation in the associative memory based on the protected data word.

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Claim 19 (original): An apparatus for performing lookup operations, the apparatus
comprising:

a protected lookup word generator for determining a protected lookup word, the
protected lookup word generator configured to receive a lookup word, the lookup word
including a lookup word original data portion, the protected lookup word including the lookup
word original data portion and a plurality of error protection bits, each of the plurality of
protection bits corresponding to one of a plurality of masks and being determined by a parity
or other error protection calculation on a result of the original data portion masked with a
different one of the plurality of masks; and

an associative memory configured to receive the protected lookup word and to
generate an associative memory result based on the protected lookup word.

Claim 20 (original): The apparatus of claim 19, comprising a protective associative
memory entry generator configured to determine a protected entry for each entry in a plurality
of associative memory entries, said each entry including an original data portion and an
original mask portion, the protected entry including a protected data portion and a protected
mask portion, the protected data portion including the original data portion and a protection
bit located at a bit position corresponding to the original mask portion, and the protected mask
portion including the original mask portion and a mask to enable the protection bit
corresponding to the original mask portion and to mask protection bits corresponding to other
masks of the plurality of masks; wherein the protection bit is determined by a parity or other
error protection calculation on a result of the original data portion masked with the original
mask portion;

wherein the associative memory is programmed with said determined protected entry
for each entry in the plurality of associative memory entries.

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Claim 21 (original): An apparatus for protecting associative memory entries, the apparatus comprising:

means for identifying a plurality of masks used for a plurality of associative memory entries;

means for determining a protected entry for each entry in the plurality of associative memory entries, said each entry including an original data portion and an original mask portion, the protected entry including a protected data portion and a protected mask portion, the protected data portion including the original data portion and a protection bit located at a bit position corresponding to the original mask portion, and the protected mask portion including the original mask portion and a mask to enable the protection bit corresponding to the original mask portion and to mask protection bits corresponding to other masks of the plurality of masks;

wherein the protection bit is determined by a parity or other error protection calculation on a result of the original data portion masked with the original mask portion.

Claim 22 (original): The apparatus of claim 21, comprising:

means for programming an associative memory with each of said protected entries; and

means for performing a lookup operation in the associative memory based on a protected lookup word;

wherein the protected lookup word includes a lookup word original data portion and a lookup word protected data portion, the lookup word protected data portion including a plurality of bits, each of the plurality of bits being determined by a parity or other error protection calculation on a result of the lookup word original data portion masked with a different one of the plurality of masks.

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Claim 23 (original): The apparatus of claim 22, wherein said means for programming the associative memory with each of said protected entries includes means for programming each of said protective entries in two consecutive locations in the associative memory.

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